

Quadratic Functions

Unit 14

Day	Section	Topic	Assignment
1	4.1	Quadratic Functions	Wksht 1-16
2	4.1	Role of a and c	Wksht both sides
3	4.1	Role of b	Wksht 1-8
4	4.1	Vertex Form	Wksht 1-11
5	4.1	Applications - Max. & Min.	Wksht 1-7
6		More Max and Min	Wksht 1-6
7		Review	Review Worksheet 1-5 Quadratic Functions – Parabolas Review
8	Test Unit 14		

Day 1: Quadratic Function Worksheet 1-16

- 1) linear 2) quadratic 3) quadratic
4) quadratic 5) linear 6) quadratic

7)

$$f(x) = x^2 + 1$$

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
f(x)	26	17	10	5	2	1	2	5	10	17	26

8)

$$y = x^2 + 2x + 1$$

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
y	16	9	4	1	0	1	4	9	16	25	36

9)

$$f(x) = x^2 - 5x + 6$$

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
y	56	42	30	20	12	6	2	0	0	2	6

- 10) $b = 0$ 11) $c = -5$ 12) $a = 5$ 13) $b = -4$

- 14) 100,000 square feet 15) 516,600 square miles

- 16) 8073 square miles

U14 Day 2

ROLE OF A:

1) UP 2) UP 3) DOWN

4) DOWN 5) UP 6) DOWN

7) $y = 3x^2$ 8) $y = -5x^2$ 9) $y = -6x^2$ 10) $y = -\frac{3}{4}x^2$

e) $f_5(x) = .25x^2$

c) $f_3(x) = -.5x^2$

f) $f_6(x) = -x^2$

d) $f_4(x) = -2x^2$

a) $f_1(x) = 3x^2$

b) $f_2(x) = 24x^2$

For values $a < 0$, $y = ax^2$ will have a maximum value.

ROLE OF C:

1) $y = -4$, $(0, -4)$ 2) $y = 0$, $(0, 0)$

3) $y = 8$, $(0, 8)$ 4) $y = 0$, $(0, 0)$

$$f_1(x) \cong f_4(x) \cong f_5(x)$$

5) $f_2(x) \cong f_6(x)$

up :

$$f_1(x), f_3(x), f_5(x), f_6(x)$$

6) *down :*

$$f_4(x), f_2(x)$$

7) a. up 6 b. (0, 6)

8) a. down 1 b. (0, -1)

9) same width, same axis of symmetry

10) One opens upward, one opens downward. One has vertex of (0, 0). The other has vertex of (0, 3)

Day 3 – see desmos.com file

Day 4 – see desmos.com file

Day 5 – Max and min problems 1-7

1) 7.5m x 15m

2) It will take 3.1 seconds for the ball to reach its max height of 45.9m

3) The manufacturer should produce 20 lighting fixtures per day to produce the minimum cost.

4) $125\text{ft} \times 166\frac{2}{3}\text{ft}$

5) $50\text{ft} \times 33\frac{1}{3}\text{ft}$

6) $6\text{cm} \times 3\text{cm}$

7) 16 ft

Day 6

1) a. 1.5 sec b. 196 ft c. 5 sec

2) a. \$350 b. \$56,000 c. \$150 and \$550

3) a. 1.5 intensity b. 202.5

$$I(x) = (4000 + 500x)(16 - x)$$

4) $I(x) = -500x^2 + 4,000x + 64,000$

Monthly charge = \$12, income = \$72,000

$$I(x) = (360 + 10x)(50 - x)$$

5) $I(x) = -10x^2 + 140x + 18250$

Monthly rent = \$430, income = \$18,490

6) 1000 square meters

Day 7 – Review

1) The absolute value of the lead coefficient (a) must be the same.

2) The absolute value of the lead coefficient (a) of the steeper graph will be greater than the less steep graph.

3) a. $(0, 3)$ b. $x = 1$ c. max
d. 5 e. $(1, 5)$

4) 42.5×85 ft; 3,612.5 square feet

$$R(x) = (300 - 20x)(10 + 2x)$$

5) a. $R(x) = -40x^2 + 400x + 3000$ b. 5
c. 20 d. 200 e. \$4000

QUADRATIC FUNTIONS – PARABOLAS REVIEW
See desmos file